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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/493,258	01/28/2000	Xin Li	723-824	2008

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EXAMINER

GOOD JOHNSON, MOTILEWA

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/493,258

Applicant(s)

LI ET AL.

Examiner

Motilewa A. Good-Johnson

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☒ Claim(s) 1-13 and 28-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in responsive to the following communications: Application, filed on 01/28/2000; IDS, paper #6, filed on 06/08/2000; IDS, paper #9, filed on 10/12/2001.
2. Claims 1-34 are pending in this application. Claims 1, 14, 27 and 32-34 are independent claims. No claims have yet been amended.
3. The present title of this application is "Incremental Interlace Interpolation for Texture Morphing" (as originally filed).

Drawings

4. The corrected or substitute drawings were received on 05/23/2000. These drawings are acceptable.

Claim Rejections - 35 USC § 112

Claims 1-34 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

5. While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161

F.2d 367, 73 USPQ 482 (CCPA 1947). The term "interlace" in claims 9 and 10 is used by the claim to mean "constant integer," while the accepted meaning is "to intertwine."

6. Claims 1-34 provides for the use of interpolating texel components, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 1-34 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claims that are noted above as being rejected but not specifically disclosed above are rejected based upon their dependency on a rejected independent claim and incorporating all limitations included therein.

Claim Objections

7. Claims 1-13 are objected to because of the following informalities: Claims should recite "a method for . . ." and not "a process for . . .", claims are process claims, however, the steps recited are method steps. Appropriate correction is required.

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8. Claims 28-31 are objected to because of the following informalities: Claim 28 recites SC as being the source texel and also the target texel component. Appropriate correction is required.

Claims that are objected to above and not recited are objected to based upon their dependency upon an objected claim and incorporating all errors therein.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3, 8-10, 12-16, 21-23 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iourcha et al., U.S. Patent Number 6,304,268, "Trilinear Texture Filtering of Two Levels of Detail Based on a Single Level of Detail", class 345/428, 10/16/2001, filed on 11/19/1998.

As per independent claim 1, Iourcha discloses trilinear texture filtering with optimized memory access, col. 1, lines 18-21. Iourcha discloses morphing or transforming image between levels of detail and interpolating the texel value at a particular resolution level, col. 1, lines 51-67. Iourcha further discloses interpolation providing intermediate levels of detail between stored texture map versions, col. 2, lines 20.

With respect to dependent claim 2, lourcha further discloses interpolation providing intermediate levels of detail between stored texture map versions, col. 2, lines 20.

With respect to dependent claim 3, lourcha discloses a texel represented as an integer and a fractions component and adding to each level to increment the level of detail, col. 5, lines 11-25.

With respect to dependent claim 8, lourcha discloses generating the texture color value by interpolating between channel values using the fractional portion of the level of detail and using an averaging technique, col. 16, lines 2-15.

With respect to dependent claim 9, lourcha discloses dimensions according to powers of two, col. 5, lines 37-38.

With respect to dependent claim 10, lourcha discloses interpolating a square texture image using scaling factors along the u and v axis, col. 5, lines 10-49.

With respect to dependent claim 12, lourcha discloses a texture mapping engine, texture cache and a texture memory, see figure 8.

With respect to dependent claim 13, lourcha discloses texels that define a set of channel values such as color, RGB, col. 5, lines 19-25.

As per independent claim 14 and dependent claims 15-16, 21-23 and 25-26, they are rejected based upon similar rational as above independent claim 1 and dependent claims 2-3, 8-10 and 12-13 respectively.

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11. Claims 4-7, 11, 17-20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over lourcha as applied to claim 1 above, and further in view of Hoppe, U.S. Patent Number 6,426,750, "Run-Time Geomorphs", class 345/428, 07/30/2002, filed on 07/14/1998.

With respect to dependent claim 4, lourcha fails to disclose the incremental morph parameter as the amount of change in the texel component for each successive time period. lourcha discloses texels comprising channel values that are interpolated to derive channel values based on locations of point in the map, col. 6, lines 1-22. Hoppe discloses creating geomorphs which are morphs created over time and associating each geomorph to occur in a number of frames, col. 3, lines 32-67. It would have been obvious to one of ordinary skill in the art at the time of the invention to include frames as disclosed in Hoppe, to the interpolated channels disclosed in lourcha to reduce memory bandwidth and performance time.

With respect to dependent claim 5, lourcha fails to disclose successive time periods comprising image frame times. lourcha discloses texels comprising channel values that are interpolated to derive channel values based on locations of point in the map, col. 6, lines 1-22. Hoppe discloses creating geomorphs which are morphs created over time and associating each geomorph to occur in a number of frames, col. 3, lines 32-67. It would have been obvious to one of ordinary skill in the art at the time of the invention to include frames as disclosed in Hoppe, to the interpolated channels disclosed in lourcha to reduce memory bandwidth and performance time.

With respect to dependent claim 6, lourcha fails to disclose the incremental morph parameter as the amount of change in the texel component for each successive time period. lourcha discloses texels comprising channel values that are interpolated to derive channel values based on locations of point in the map, col. 6, lines 1-22. Hoppe discloses creating geomorphs which are morphs created over time and associating each geomorph to occur in a number of frames, col. 3, lines 32-67. It would have been obvious to one of ordinary skill in the art at the time of the invention to include frames as disclosed in Hoppe, to the interpolated channels disclosed in lourcha to reduce memory bandwidth and performance time.

With respect to dependent claim 7, lourcha discloses adding 1 to represent the next integer portion of the level of detail, col. 5, lines 11-25.

With respect to dependent claim 11, lourcha fails to disclose the incremental morph parameter as the amount of change in the texel component for each successive time period. lourcha discloses texels comprising channel values that are interpolated to derive channel values based on locations of point in the map, col. 6, lines 1-22. Hoppe discloses creating geomorphs which are morphs created over time and associating each geomorph to occur in a number of frames, col. 3, lines 32-67. It would have been obvious to one of ordinary skill in the art at the time of the invention to include frames as disclosed in Hoppe, to the interpolated channels disclosed in lourcha to reduce memory bandwidth and performance time.

With respect to dependent claims 17-20 and 24, they are rejected based upon similar rational as above dependent claims 4-7 and 11 respectively.

12. Claims 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoppe.

As per independent claim 27, Hoppe discloses creating geomorphs which are morphs created over time and associating each geomorph to occur in a number of frames, col. 3, lines 32-67. However, it is noted that Hoppe fails to disclose texel components and integer results. Hoppe discloses said interpolation other scalar attributes can be interpolating defined on the mesh. It would have been obvious to one of ordinary skill in the art at the time of the invention of Hoppe to include texel components in the scalar attributes because texture values are attributes of a pixel.

With respect to dependent claim 28, Hoppe discloses gtime as being user specified and being equal to the frame rate which is given as frames/sec, col. 17, lines 24-37, and further discloses calculating a new mesh value from the calculation of a previous mesh value by interpolation for geomorph refinement, col. 16, lines 33-54.

With respect to dependent claim 29, Hoppe discloses a constant frame-rate for morphing the geometry over time, col. 15, lines 33-37, and further discloses

With respect to dependent claim 30, Hoppe discloses a vertex evaluation for $\frac{1}{2}$ second of video having 30 frames per second and spreading the vertex evaluation across 15 frames, col. 3, lines 35-50.

With respect to dependent claim 31, Hoppe discloses a gtime counter, col. 13, lines 45-47.

As per independent claim 32, Hoppe discloses setting a time limit and setting a maximum number of frames, and distributing the evaluation process across the number of frames. Hoppe further discloses determining an incremental step in each frame to occur over a period of time for a number of interpolation steps equals the frame rate, col. 3, lines 58-67, and in col. 4, lines 1-4. Hoppe further discloses applying a texture-map to the frame buffer, col. 7, lines 56-59. Hoppe discloses adjusting the screen space error tolerance by a value of 1 pixel, col. 15, lines 33-42. Hoppe discloses a user interaction of controls, col. 5, lines 48-50. However, it is noted that Hoppe fails to disclose texel components and integer results. Hoppe discloses said interpolation other scalar attributes can be interpolating defined on the mesh. It would have been obvious to one of ordinary skill in the art at the time of the invention of Hoppe to include texel components in the scalar attributes because texture values are attributes of a pixel.

As per independent claim 33, it is rejected based upon similar rational as above independent claim 32.

As per independent claim 34, it is rejected based upon similar rational as above independent claim 33 respectively. Hoppe further discloses said storage devices, col. 5, lines 45-67.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6,362,833	Trika	345/646	03/2002	04/1998
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Method and apparatus for progressively constructing a series of morphs between two-dimensional or three-dimensional models.

6,348,917 Vaswani 345/418 02/2002 09/1996

Dynamic switching of texture mip-maps based on depth.

6,262,730 Migdal et al. 345/423 07/2001 03/1999


System and method for computer modeling of 3D objects or surfaces by mesh constructions having optimal quality characteristics and dynamic resolution capabilities.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (703) 305-4713. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Motilewa A. Good-Johnson
Examiner
Art Unit 2672


JEFFERY BRIER
PRIMARY EXAMINER

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August 9, 2002